

A NEW SPECIES OF *HERSHKOVITZIA* (DIPTERA: NYCTERIBIIDAE)
FROM BRAZIL, WITH A KEY TO THE DESCRIBED SPECIES
OF THE GENUS

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Abstract.—A new species of nycteribiid bat fly *Herskovitzia cabala* is described and illustrated. This genus is recorded from Brazil for the first time, and a key to the described species is presented.

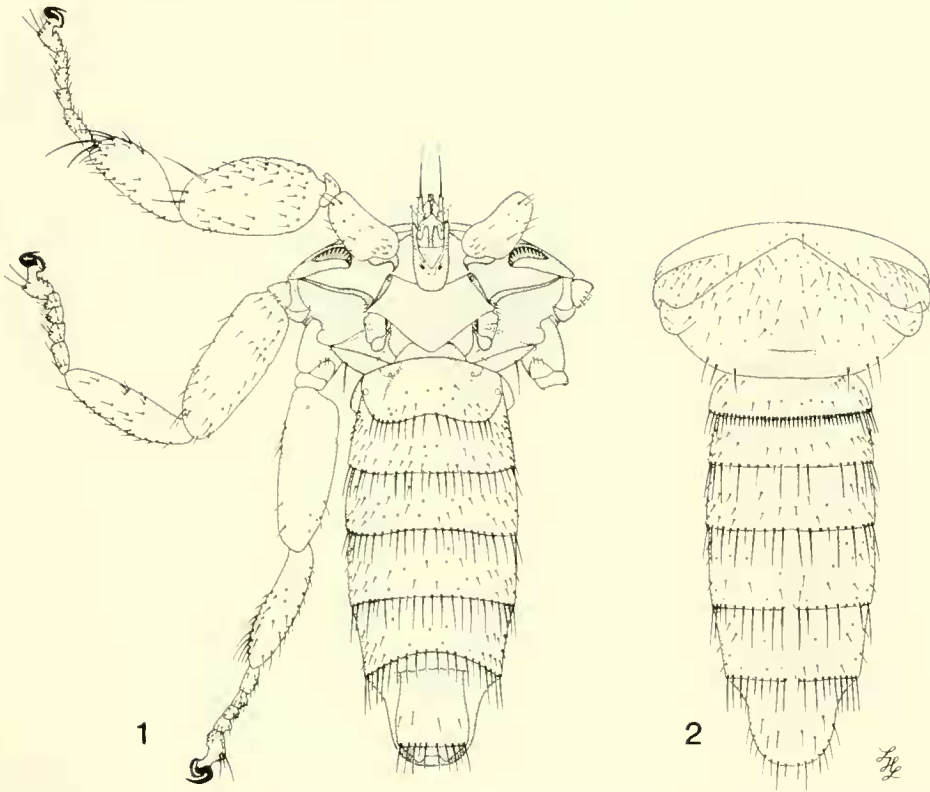
To date, the genus *Herskovitzia* Guimarães and d'Andretta (1956) has been known from less than a dozen specimens representing three neotropical species. A fourth species is described herein, based on a single female specimen taken from a disk-winged bat, *Thyroptera tricolor* Spix (subspecies *albiventer* Tomes). The host bat was captured in a mist net placed along a trail leading to the cataracts of the Rio Tapajós, in the Parque Nacional da Amazônia, at Uruá, Brazil. The mist net was strung near a recently cleared area just inside secondary forest on the fringe of littoral primary forest. Specimens of this species of bat are infrequently captured by mist netting. The roosting habits of the bat do not favor the propagation of large ectoparasite populations. Evidence suggests that this bat is limited to roosting in small numbers in rolled new leaves of members of the banana family (Musaceae), and that this very specialized type of roost is both temporary and limited in its availability (Findley and Wilson, 1974). Therefore, the discovery of an ectoparasitic fly from such a bat is exciting and, in this instance, noteworthy because the fly represents a new species. We take the opportunity to describe the new species, and to report the first species of *Herskovitzia* definitely known from Brazil.

Herskovitzia cabala Peterson and Lacey, NEW SPECIES

Figs. 1-2

Description.—Female (holotype): General body color entirely pale yellow with a faint brownish tinge. Length, 1.55 mm.

Head.—Anterodorsal margin of head capsule concavely U-shaped surrounding membranous ptilinal area, and bearing 4 short setae, 1 medial to and near hind margin of each eye, and 1 longer seta directly in front of each eye. Ventral margin of gena with 3 setae. Eye consisting of a single lens projecting from surface, with a dark base. Palpus rather uniformly narrow, only slightly broadened beyond midlength; bearing 2 long subterminal setae and 4 shorter setae along its length.



Figs. 1-2. *Hershkovitzia cabala*, n. sp. 1, Habitus, female holotype (dorsal view). 2, Thorax and abdomen (ventral view). Note.—The head, as shown, is partially tilted backward onto the thorax. The ventral margins of the legs have been rotated anterodorsally through an arc of 90° to show the anterior surface of each leg.

Prementum (theca) of proboscis pyriform, about twice as long as labella. Antenna with a dorsal median thumb-like projection; arista digitiform, apex slightly curved and somewhat wider than stem or base, rather uniformly micropubescent.

Thorax.—Wider than long; length to width = 2:3. Notopleural ridges (notopleural sutures) diverging posteriorly, with 3 notopleural setae but without lateral expansions; pleural plates rod-like, one each directed toward, and articulating with mid coxa and hind coxa. Postnotum reduced to a narrow V-shaped bar. Halter present, its groove not covered. Thoracic ctenidium with 10 spines. Angle between ventral oblique sutures about 90° . Median longitudinal suture absent. Ventral surface of thoracic sternites with about 50 stout setae of varying lengths; general discal setulae relatively sparse, concentrated near anterior margin of sternal plate; hind margin of sternal plate with a few long setae. Legs relatively short and stout, only moderately bristly. Foreleg with femur broad, slightly less than twice as long as wide; tibia cleaver-like in shape, 2.5 times as long as wide, its ventral margin strongly curved and bearing 4 rows of setae in distal half; basitarsus subequal in length to combined tarsomeres 2-4, and more than $\frac{1}{2}$ as long as tibia.

Midleg with femur cylindrical, about 3 times as long as wide; tibia more slender, about 4 times as long as wide, and bearing 3 ventral rows of short setae in proximal half; basitarsus slightly less than $\frac{1}{4}$ as long as tibia. Hindleg with femur cylindrical, about 2.5 times as long as wide; tibia slender, slightly more than twice as long as wide, bearing 5 ventral rows of setae in distal $\frac{2}{3}$; basitarsus about $\frac{1}{2}$ as long as tibia.

Abdomen.—With 7 sclerotized tergites (including syntergite 1+2) and sternites. Syntergite 1+2 with 20 short discal setae on posterior half, and with a posterior marginal row of 18 moderately long setae. Tergites 3–6 with 10–30 short, scattered discal setae, and their hind margins each with a row of longer setae. Tergite 7 with 4 discal setae, its hind margin rounded and bearing a row of 10 longer setae. Terminal segment short, narrowing and rounded posteriorly, with 6 setae near hind margin. Dorsal genital plate subtriangular, weakly sclerotized, bearing 6 setulae. Anal sclerite absent. Postspiracular sclerite small and difficult to distinguish. Sternite 2 with a ctenidium consisting of 32 spines whose bases do not touch, and 5 long setae on each side of ctenidium; a submarginal row of short setae present, and with a few scattered setae near anterolateral corners of sternite. Hind margins of sternites 3–6 each with a row of about 10 long setae interspersed with a few short setae, remainder of sternal surfaces sparsely beset with short setae but which are more numerous laterally. Sternites 3–4 undivided but with a pale, less sclerotized median strip; sternites 5–6 each indistinctly divided medially to form 2 lateral plates. Sternite 7 entire, posterior margin rounded, bearing 14 long and shorter setae, discal surface with 6 short setae.

Male unknown.

Holotype.—Female (in alcohol), trail to cataracts, Rio Tapajós, Parque Nacional da Amazônia, Uruá, Brasil, June 17, 1979, L. A. Lacey. Host, *Thyroptera tricolor* Spix (subspecies *albiventer* Tomes). The holotype will be deposited in the collection of the Museu de Zoologia da Universidade de São Paulo, Brasil.

Etymology.—The name *cabala* is a noun in apposition. It is a medieval Latin term meaning "secret," referring to the unknown habits of this species.

Remarks.—This is the smallest known species of the genus and is readily distinguished from the other three described species by the characters given in the following key. *Herskovitzia cabala* is most similar to *H. primitiva* Guimarães and d'Andretta. However, *H. cabala* is smaller, much less setose, and sternites 3–4 are not divided medially into 2 lateral plates, whereas these sternites are divided in *H. primitiva*. For descriptions and illustrations of the other species in the genus see Guimarães and d'Andretta (1956), and Theodor (1967).

Species of *Herskovitzia* have been found only on bats of the genus *Thyroptera* Spix (Family Thyropteridae) and thus might be restricted to this family of bats. If they are host specific, as seems probable, then it is interesting that while *Thyroptera* contains only two species with five currently recognized subspecies, there are four known species of *Herskovitzia*. This raises some interesting questions. Is it possible that each of the subspecies of the two recognized species of *Thyroptera* carries its own species of *Herskovitzia*? If so, could these subspecies of *Thyroptera* actually be full species? Since both *Herskovitzia primitiva* and *inaequalis* seemingly occur on the same subspecies, *Thyroptera discifera discifera* (L. & P.), the latter possibility would seem to be negated. However, it is possible that the hosts

of these two bat flies were either not identified or recognized at the subspecies level, or that a still unrecognized subspecies might be present in the region of Colombia and Peru where these two bat flies occur. As with all the subspecies, the distributional limits of the two subspecies of *Thyroptera discifera*, i.e. *T. d. discifera* and *T. d. abdita* Wilson, are not fully known because of a paucity of both specimens and published records. Other possibilities are that the populations of *HersHKovitzia* historically have been isolated by the unusual roosting habits of the hosts, and/or have undergone a more visible degree of speciation than have the host species. Answers to these and other questions can be attempted only after much more data and many more specimens have been collected of both these interesting bat hosts and their complement of ectoparasitic flies.

KEY TO SPECIES OF *HERSHKOVITZIA*

Females

1. Eye absent. Notopleural ridge with 2 setae. Angle between oblique sutures of sternum about 98°. Labella of proboscis about 1/3 length of prementum (theca). Dorsal genital plate broadly rounded, bearing about 10 setulae *coeca* Theodor
Host: unknown species of bat. Distribution: unknown (probably from Central or South America).
- Eye present. Notopleural ridge with 3 or 4 setae. Angle between oblique sutures of sternum about 90°, 92°, or 105°. Labella of proboscis about 1/2 or more as long as prementum. Dorsal genital plate more triangular, with 6 or fewer setulae 2
2. Abdominal ctenidium consisting of 32 spines. Syntergite 1+2 with fewer (20) short discal setae scattered on posterior half. Sternites 3-4 not divided into lateral plates. Small species, 1.55 mm long *cabala* n. sp.
Host: *Thyroptera tricolor* Spix. Distribution: Brazil.
- Abdominal ctenidium consisting of about 47-58 spines. Syntergite 1+2 with more numerous (30 or more) discal setae that are not confined to posterior half. At least sternites 4-6 divided into lateral plates. Larger species, 2.5-3.23 mm long 3
3. Anterodorsal margin of head capsule with a V-shaped emargination at middle. Labella of proboscis about 1/2 as long as prementum. Angle between oblique sutures of sternum about 92°. Sternite 7 with lateral and posterior margins continuous and broadly rounded. 2.5 mm long
. *primitiva* Guimarães and d'Andretta
Host: *Thyroptera discifera* (Lichtenstein and Peters). Distribution: Colombia.
- Anterodorsal margin of head capsule entire, without a median emargination. Labella of proboscis subequal in length to prementum. Angle between oblique sutures of sternum 105°. Sternite 7 somewhat triangular, lateral margins slightly concave and diverging posterolaterally so that hind margin is wide and shallowly concave in middle. 3.0-3.25 mm long
. *inaequalis* Theodor
Host: *Thyroptera discifera*. Distribution: Peru.

Males

Males of *coeca* and *cabala* are unknown.

1. Abdominal ctenidium consisting of 47–48 stout spines, and extending full width of segment. Angle between oblique sutures of thoracic sternum about 92°. Surstyli nearly straight, angled so that tips are convergent. Aedeagus cylindrical, of nearly uniform width, apex broad and membranous *primitiva*
- Abdominal ctenidium consisting of 53 narrow spines, not extending full width of segment, lateral quarters of segment with only normal setae. Angle between oblique sutures of thoracic sternum about 105°. Surstyli slightly bowed inwardly so that tips are divergent. Apex of aedeagus with a narrow, beak-like ventral process *inaequalis*

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